System Integration & Test and Mechanical Aerospace Ground Equipment (MAGE)

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Top Level Requirements (1 of 2)

- **Define and Implement a System Test Program That Qualifies FAME Flight Hardware for All Handling, Transportation, Launch, and Mission Environments**
  - **NCST-TP-FM001, FAME Test Plan**
- **Maintain FAME Flight Hardware Cleanliness Levels as Specified in NCST-D-FM007, FAME Contamination Control Plan, Through All Phases of Assembly, Integration, Test, Transportation, and Field Operations**
- **Provide all Necessary MAGE, Fixtures, and Adapters For Safe Handling, Testing and Transportation of FAME Flight Hardware During All Phases of Assembly, Integration, Test, Transportation, and Field Operations**
- **MAGE Design Safety Factors, NDE, and Proof Testing Comply With NRL and Range Safety Requirements**

Top Level Requirements (2 of 2)

- **FAME Flight Hardware Shall be Protected During Ground Handling and Transportation so That the Environmental Conditions to Not Exceed Flight or Orbital Conditions**

- **All Flight Hardware Activities Comply With SSD-D-FM005, FAME Product Assurance Plan**

  - **Includes Control of Non-Conforming Materials**

  - **Includes Failure Reporting and Corrective Action System**

- **All Flight Hardware Activities Comply With SSD-D-FM006, FAME Safety, Reliability and Quality Assurance Plan**

Derived Requirements (1 of 3)

Levied by System

- Workmanship
  - FAME Flight Hardware is Manufactured, Processed, Tested, and Handled Such That Finished Items are of Sufficient Quality to Ensure Reliable Operation, Safety, and Service Life
- Environmental Testing
  - Perform/Support All Environmental Testing Specified in NCST-TP-FM001, FAME Test Plan
- Protective Covers
  - Provide and Install Protective Covers over Sensitive Flight Hardware Components Whenever Possible During All Phases of I&T, Transportation, and Field Operations
- MAGE
  - Use Existing MAGE (With Modifications) Wherever Possible as Cost Savings Measure
- Tooling
  - Provide All Necessary Tooling/Fixtures For Efficient Fabrication and Assembly of FAME Flight Hardware

Derived Requirements (2 of 3)

Levied by ADCS

- Thruster Alignment Knowledge
  - Inspect the As-Installed RCS Thruster Alignment and Provide Data to ADCS
- Trim Mass Alignment
  - Install/Adjust Trim Masses to Meet TBD Alignment Requirements
- ADCS Sensor Alignment
  - Install/Adjust ADCS Sensors to Meet TBD Alignment Requirements
- ADCS Sensor Alignment Knowledge
  - Inspect As-Installed ADCS Sensor Alignment and Provide Data to ADCS
- Instrument Alignment
  - Install/Adjust Instrument to Meet TBD Alignment Requirements to Spacecraft Axes
- Instrument Alignment Knowledge
  - Inspect As-Installed Instrument Alignment and Provide Data to ADCS
- Sun Facing Panels
  - Inspect/Adjust Sun Facing Panel/Deck Flatness/Angle to Meet ADCS Requirements

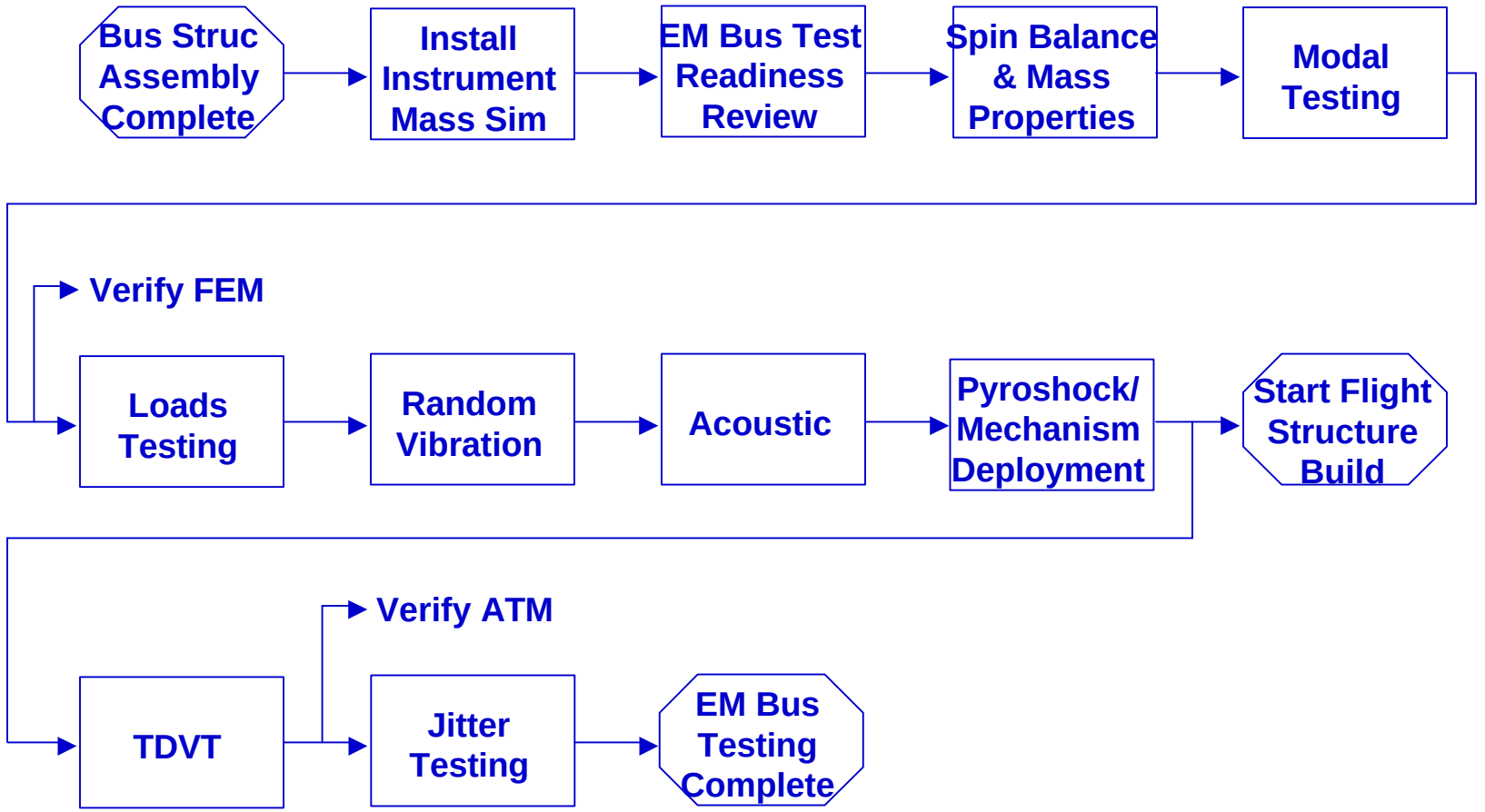
Derived Requirements (3 of 3)

- Levied by ADCS (Continued)
  - Observatory Mass Properties
    - Measure/Balance/Adjust Observatory CG and Mass Properties to Meet ADCS Requirements
- Levied by Harness
  - Mock-Up
    - Provide FAME Bus Mock-Up for Harness Fabrication and Electrical Integration
- Levied by RCS
  - Handling Dolly
    - Provide Handling Dolly With Two Axis Gimbal for RCS I&T Activities
  - Thruster Alignment
    - Inspect and Adjust RCS Thruster Alignment as Required to Meet Alignment Accuracy Requirements
- Levied by Launch Vehicle
  - Dimensions and Envelope
    - Measure FAME Flight Vehicle Envelope to Ensure Compliance with LV ICD

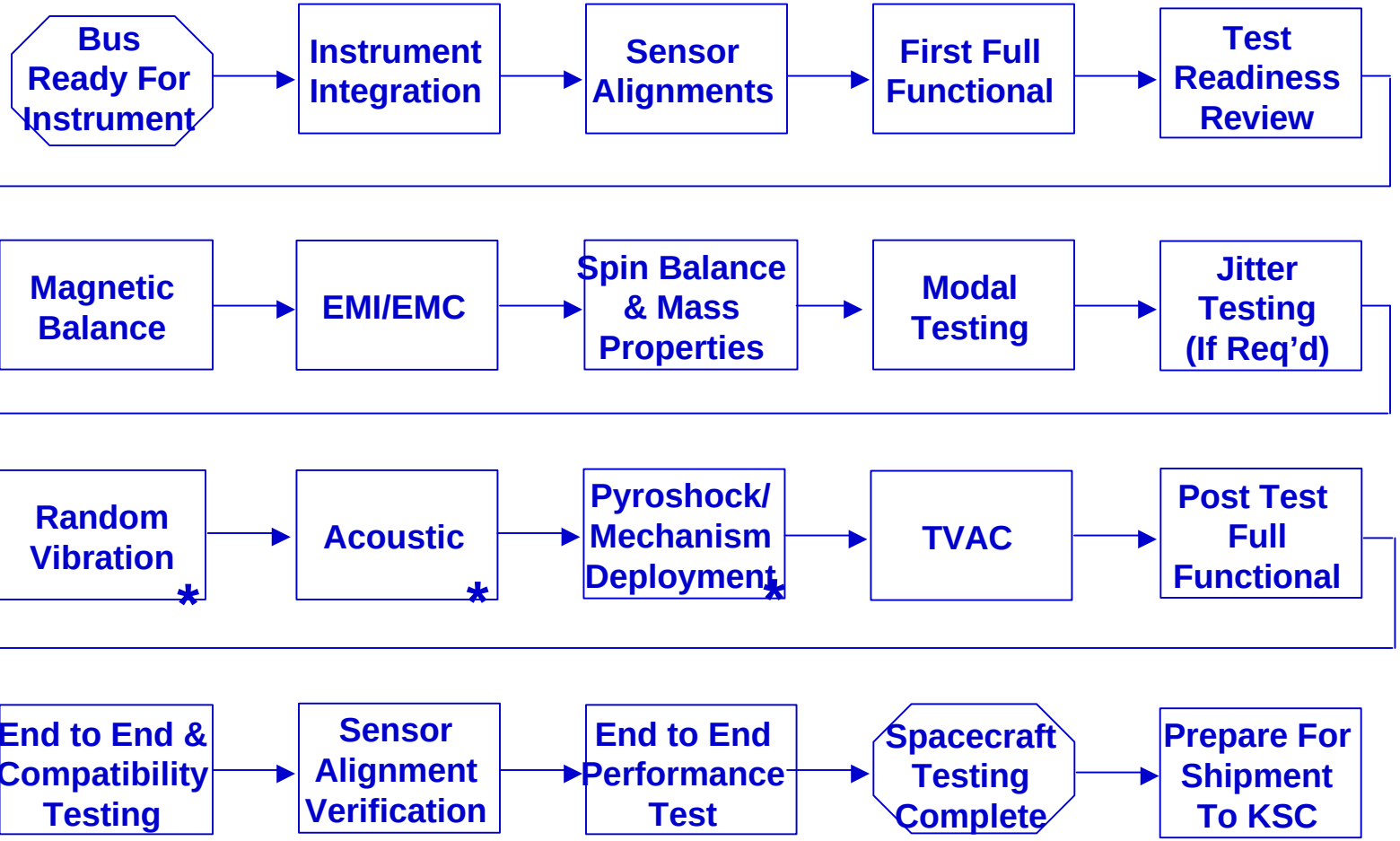
Issues

- **Identify FAME Magnetic Balancing Requirements and Facility**
- **Identify FAME EMI Test Requirements and Facility**
- **Determine if NCST Facilities Are Adequate for FAME Spin Balance Requirements**

Backup - EM Bus Test Flow



Backup - FAME S/C Test Flow



* System & RCS Functional Testing Following Test